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EXAMINER

CHAKRABARTI, ARUN K

ART UNIT PAPER NUMBER

1634

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Paper NO: 0403

Application Number: 09/895,050

Filing Date: 06/29/2001

Appellant(s): Agilent Technologies, Inc.

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Gordon M. Stewart

For Appellant

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**EXAMINER'S ANSWER**

This is in response to the appeal brief filed on March 24, 2003.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Invention**

The summary of invention contained in the brief is correct.

### ***(6) Issues***

The appellant's statement of the issues in the brief is correct.

### **(7) Grouping of Claims**

Appellant's brief includes a statement that claims 29, 30, 32, 34, 35, and 33 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). The appellant is hereby notified that the numbering of rejected claims on page 5 (Section VIII, Heading Rejection of claims of Groups I and II (Claims 29, 20, 32-35) of the appeal brief is wrong. The actual rejected claims are 29, 30, and 32-35, which was mentioned correctly on the first line under the heading mentioned above.

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

5,859,233	Hirschbein	1-1999
Baldeschwieler, J.D. et al, "Method and Apparatus for Performing Multiple Sequential Reactions on a Matrix." PCT International Publication Number WO 95/25116 (September 21, 1995).		

### (10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 29-30, 32, and 34-35 under appeals rejected under 35 U.S.C. 103 (a) over Baldeschwieler et al. (PCT International Application NO: WO 95/25116) (September 21, 1995) in view of Hirschbein et al. (U.S. Patent 5,859,233) (January 12, 1999).

Baldeschwieler et al teach an apparatus for fabricating an addressable array of biopolymers on a substrate according to a target pattern (Abstract), comprising:

(a) a deposition system which can separately dispense onto a substrate, fluid compositions of different biomonomers each with a first linking group which must be activated for linking to a substrate bound moiety, and a fluid composition of a solid activator (claims 28 and 29 and Figures 2 and 4 and Example 1);

(b) a processor to operate the deposition system, which processor derives from the target array pattern a target drive pattern for operating the deposition system to form the array, the target drive pattern including instructions to the deposition system to deposit the fluid composition of solid activator at each region at which a biomonomer monomer is to be deposited, separate from and preceding deposition of the biomonomer (Example 1, Page 19, lines 3-33 and claims 28 and 29 and page 13, lines 16-21).

Baldeschwieler et al teach an apparatus, wherein the deposition system comprises multiple jets which can dispense droplets of the different biomonomer fluid compositions and at least one pulse jet which can separately dispense the activator fluid composition, each jet including a

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chamber with an orifice, and including an ejector which, when activated, causes a droplet to be ejected from the orifice (page 13, lines 3-34 and Figures 2 and 4).

Baldeschwieler et al teach an apparatus , wherein the intermediate steps are repeated with a deposition system comprising a head having a multiple pulse jets which can dispense droplets of the different biomonomer fluid composition (Claim 1 and Figure 2 and Page 16, line 18 to page 17, line 26).

Baldeschwieler et al teach a computer program product for use on an apparatus for fabricating an addressable array of biopolymer probes on a substrate according to a target array pattern, the program product comprising: a computer readable storage medium having a computer program stored thereon, which when loaded into a computer of the apparatus performs the steps described above (page 19, lines 3-33).

Baldeschwieler et al do not teach the apparatus wherein sufficient time is allowed for evaporation to leave solid activator at the region and then depositing the biomonomer.

Hirschbein et al. teach the method, wherein sufficient time is allowed for evaporation to leave solid activator at the region (Example 2 and Column 12, lines 27-39 and Column 13, line 46 to Column 14, line 9). Although Hirschbein et al teach the mixing of activator and monomer simultaneously, MPEP 2144.04 further states, “*In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) Selection of any order of mixing ingredients is *prima facie* obvious”.

It would have been further *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to modify the computer programmable apparatus of Baldeschwieler et al to allow sufficient time for drying of the activator, since Hirschbein et al.

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state, "The use of very dry reagents and solvents during the synthesis of the monomers is very helpful to effect this end. This allows the use of less phosphorylating agent in the monomer syntheses and the generation of less of the impurity (Column 13, line 46 to Column 14, line 4). "

Hirschbein et al further state, "The method of the invention greatly improves product yields and reduces reagents usage over currently available methods for synthesizing the above class of compounds (Abstract, last sentence)". By employing scientific reasoning, an ordinary artisan would have combined and substituted an apparatus and modified the algorithm of computer programs of Baldeschwieler et al. into the method of Hirschbein et al. wherein sufficient time is allowed for evaporation to leave solid activator at the region, in order to design and improve an apparatus for the synthesis of array of biomolecules. It was well known in the art that computer programming modification enables one to design and/or modify the functions of an apparatus. An ordinary practitioner would have been motivated to combine and substitute a method wherein sufficient time is allowed for evaporation to leave solid activator at the region of Hirschbein et al. into the computer programmable (C/C++) method and apparatus of Baldeschwieler et al. (page 19, lines 3-33) in order to achieve the express advantages , as noted by Hirschbein et al., of an invention which provides the use of very dry reagents and solvents, and environment free of water (inherently including **allowing sufficient time for evaporation to leave a solid activator**) during the synthesis of the monomers that is very helpful and which allows the use of less phosphorylating agent in the monomer syntheses and the generation of less of the impurity and which greatly improves product yields and reduces reagents usage over currently available methods for synthesizing biopolymers.

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*Allowable Subject Matter*

3. Claim 31 is allowed in view of the fact that no prior art of record either teaches or suggests a droplet of biomonomer fluid composition deposited at a region will cover an area greater than that covered by a preceding droplet of activator fluid composition at the same region.

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**(11) Response to Argument**

In response to argument, claim 33 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

However, appellant's other arguments to withdraw the rejection under 35 U.S.C. 103 (a) is not persuasive. Appellant argues that Hirschbein reference does not teach the method step for **allowing sufficient time for evaporation to leave a solid activator** as required by the claims.

Appellant argues that the phrase is not found in Hirschbein reference and only the words "dry" or "being free of water" are found. Appellant argues that because Hirschbein has a preferred embodiment of dry solvents free of water, Hirschbein is limited to the preferred embodiment.


Appellant's argument is not persuasive, as MPEP 2123 states "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In *re Susi*, 169 USPQ 423 (CCPA 1971)." MPEP 2123 also states "A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 10 USPQ2d 1843 (Fed. Cir. 1989)." Hirschbein teaching cannot be limited to one preferred embodiment. The reference clearly suggests the use of dry solvents to synthesize the phosphoramidite nucleosides.

The absence of water (which interferes in the coupling reaction of the free hydroxyl group of one phosphoramidite nucleosides bound to the solid surface with the amino group of subsequent incoming droplet containing new phosphoramidite nucleosides) and allowing sufficient time leading to the evaporation of the activator to form a solid deposit, are inherently present in this chemically and structurally identical molecule. For example, Hirschbein teaches that solvents are

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removed *in vacuo* resulting in the deposition of a brown solid (Example 2, Column 22, lines 27-38).

For the above reasons, it is believed that the rejections should be sustained.

  
**ARUN K. CHAKRABARTI**  
PATENT EXAMINER

Respectfully submitted,


Arun K Chakrabarti, Ph.D.


April 15, 2003

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